DIRECT TESTIMONY

OF

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FINANCIAL ANALYST

FINANCE DEPARTMENT

FINANCIAL ANALYSIS DIVISION

ILLINOIS COMMERCE COMMISSION

AMERITECH ILLINOIS

DOCKET NOS. 98-0252/0335 (CONSOL.)

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Introduction

Q. Please state your name and business address.

A. My name is Janis Freetly. My business address is 527 East Capitol Avenue, Springfield, Illinois 62701.

Q. What is your current position with the Illinois Commerce Commission ("Commission")?

A. I am currently employed as a Financial Analyst in the Finance Department of the Financial Analysis Division.

Q. Please describe your qualifications and background.

A. In May of 1995, I earned a Bachelor of Business degree in Marketing from Western Illinois University. I received a Master of Business Administration degree, with a concentration in Finance, from Western Illinois University in May of 1998. I have been employed by the Commission in my present position since September of 1998.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present my analysis of Ameritech Illinois' ("AI" or "the Company") capital structure for the year ended December 31, 1999, and weighted average cost of capital in the event that the Commission orders rate re-initialization as part of this proceeding. I will also respond to a portion of the

supplemental direct testimony of AI witness David H. Gebhardt and the direct testimony of AI witness Roger G. Ibbotson.

Q. Staff has determined that the quality of AI's service has been poor in several important respects. Does your estimate of AI's cost of common equity include an adjustment designed to penalize AI for providing poor quality service?

A. No. In the context of traditional rate base/rate of return regulation, an adjustment to AI's rates for poor service quality can be implemented through an adjustment to its allowed rate of return on common equity or through a variety of other mechanisms. However, it is not the purpose of my testimony to quantify what such an adjustment should be, whether implemented through AI's allowed rate of return or through some other means. Staff witnesses Cindy Jackson and Sam McClerren will present Staff's recommendation regarding penalties for poor quality service.

Cost of Capital

Q. Please summarize your cost of capital findings.

A. The overall cost of capital for AI ranges from 9.74% to 11.30% with a midpoint estimate of 10.52%, as shown on Schedule 11.11.

Q. What is the overall cost of capital for a public utility?

A. The overall cost of capital is the sum of the component costs of the capital structure (i.e., debt, preferred stock, and common equity) after each is weighted by its

proportion to total capital. It represents the rate of return the public utility needs to earn on its assets to satisfy contractual obligations to, or the market requirements of, its investors.

Q. Why is it important to determine a reasonable cost of capital for a public utility?

A. A primary objective of regulation is to minimize the cost of reliable service to ratepayers while allowing public utilities to earn a fair and reasonable rate of return. Under the traditional, earnings based regulatory model, when a public utility is authorized a rate of return on rate base equal to a reasonable cost of capital, the interests of ratepayers and investors are properly balanced. If the authorized rate of return is greater than a reasonable cost of capital, ratepayers are burdened with excessive rates. Conversely, if the authorized rate of return is less than a reasonable cost of capital, the utility may be unable to raise capital at a reasonable cost and ultimately may be unable to raise sufficient capital to meet demands for service. Therefore, the interests of ratepayers and investors are best served when a utility's allowed rate of return is set equal to a reasonable overall cost of capital.

Capital Structure

Q. Does capital structure affect the overall cost of capital?

A. Yes. Financial theory suggests capital structure will affect the value of a firm and, therefore, its cost of capital, to the extent it affects the expected level of cash flows that accrue to third parties (i.e., other than debt and stock holders). Employing debt as a source of capital reduces a company's income taxes,[1] thereby reducing the cost of capital. However, as reliance on debt as a source of capital increases, so does the probability of bankruptcy. As bankruptcy becomes more probable, expected payments to attorneys, trustees, accountants and other third parties increase. Simultaneously, the expected value of the income tax shield provided by debt financing declines. Beyond a certain point, a growing dependence on debt as a source of funds increases the overall cost of capital. Therefore, the Commission should not determine the overall rate of return from a utility's actual capital structure if it determines that capital structure adversely affects the overall cost of capital.

An optimal capital structure would minimize the cost associated with the capital a utility raises and maintain its financial integrity. Unfortunately, determining whether a capital structure is optimal remains problematic because (1) the cost of capital is a continuous function of the capital structure, rendering its precise measurement along each segment of the range of possible capital structures problematic; (2) the optimal capital structure is a function of operating risk, which is dynamic; and (3) the relative costs of the different types of capital vary with dynamic market conditions.

[1] The tax advantage debt has over equity at the corporate level is partially offset at the individual investor level. Debt investors receive returns largely in the form of current income (i.e., interest). In contrast, equity investors receive returns in the form of both current income (i.e., dividends) and capital appreciation (i.e., capital gains). Taxes on capital gains are lower than taxes on interest and dividend income because capital gains tax rates are lower, and taxes on capital gains are deferred until realized.

Consequently, one should determine whether the capital structure is consistent with the financial strength necessary to access the capital markets under all conditions, and if so, whether the cost of that financial strength is reasonable.

Q. What capital structure did the Company propose for use in this proceeding?

A. The Company proposes to use AI's target market-weighted capital structure to determine the weighted average cost of capital ("WACC"). AI witnesses David H. Gebhardt and Roger G. Ibbotson claim that AI's target market-weighted capital structure is that of its publicly traded peer group companies.[2] Dr. Ibbotson estimated that AI's target market capital structure consists of 75.09% equity and 24.91% debt.[3]

Q. Is the Company's proposed capital structure appropriate for determining AI's overall rate of return?

A. No. Use of a market-value capital structure for estimating a company's cost of capital is inappropriate in the context of original cost rate setting procedures. Utility regulators almost universally employ book values in the determination of the capital structure. A book value capital structure should be utilized for several reasons. First, the relationship of debt and equity at book value is an expression of a company's long-term capital structure policy. Incremental funds are raised in proportions that maintain the target debt/equity ratio in book value terms, hence, the

[2] AI Exhibit 1.1, Supplemental Direct Testimony of David H. Gebhardt, p. 111; AI Exhibit 6.0, Direct Testimony of Roger G. Ibbotson, pp. 10 and 38.

[3] AI Exhibit 6.0, Direct Testimony of Roger G. Ibbotson, Schedule 12.

earnings requirements to cover capital costs must be computed using the actual book value weights in which funds are raised. Second, book value proportions are more stable. Use of the book value capital structure avoids the vagaries introduced by the variability of market values. Third, use of a market value capital structure would be inconsistent with a book value rate base. Use of book quantities of the components of the capital structure is appropriate for the purpose of traditional, original cost rate making.[4]

Q. What capital structure do you recommend?

A. For the reasons given above, I recommend using AI's book value capital structure for the year ended December 31, 1999, as shown on Schedule 11.01. The Commission has consistently approved using a company's book value capital structure for use in determining the weighted average cost of capital.

Q. How did you measure the balance of short-term debt?

A. I calculated twelve monthly averages from the monthly ending balances of short-term debt for the period from June 1999 through June 2000. I then averaged the twelve monthly average balances to arrive at the average balance of short-term debt outstanding over that period. Since short-term debt balances tend to fluctuate substantially during a year, any single balance might not be representative of the amount utilized throughout the year. I chose the July 1999 through June 2000 period because it is centered in time at December 31, 1999, the measurement date for the

[4] Morin, Roger, Regulatory Finance - Utilities' Cost of Capital, 1994, pp. 411-413.

other components of the capital structure. Schedule 11.02 presents the calculation of the average balance of short-term debt.

Q. How did you determine the balance of long-term debt?

A. The balance of long-term debt should reflect the carrying value of the issues and capital leases outstanding as of December 31, 1999. I modified the principal amount of the capital leases as reported by AI on Schedule D-3 to reflect the ending balance as of December 31, 1999, including those with current maturities.[5] The derivation of the balance of long-term debt is presented on Schedule 11.03.

Q. How did you determine the balance of common equity?

A. The $1,824,500,000 balance of common equity is the balance reported by the Company in its annual report to the Federal Communications Commission.[6] AI made several adjustments to this balance to arrive at the $2,975,440,000 balance presented on Schedule D-1, sent in response to Staff data request SDR-070. According to the Company's response to Staff data request BLV-012, none of these adjustments were included in rate base. Therefore, I did not increase the equity balance by making these adjustments to ensure that the capital structure is consistent with rate base.

Q. Is your recommended capital structure reasonable for determining AI's overall rate of return?

[5] Company Response to Staff Data Request JF-3.02.
[6] Form 23, Annual Report of Illinois Bell Telephone Company to the Illinois Commerce Commission,

A. In order to determine what is a reasonable capital structure for AI, I analyzed the total debt ratio of the telecommunications industry. Standard & Poor's categorizes debt securities on the basis of default risk. Although no formula exists for determining a debt rating, Standard & Poor's publishes benchmarks for various financial ratios according to debt rating. The total debt ratio of 40.06% that I am recommending for AI is consistent with the benchmark for AA rated telecommunications companies of under 42%.[7] Therefore, my capital structure recommendation is reasonable.

Cost of Short-Term Debt

Q. What is the cost of short-term debt for AI?

A. AI borrows short-term debt from its parent company SBC Communications Inc. ("SBC"). According to AI's response to Staff Data Request SDR-071, virtually all of the short-term debt is in the form of commercial paper with an average maturity of about thirty days. SBC's commercial paper is rated A-1+ by Standard & Poor's and P-1 by Moody's.[8] To estimate the cost of short-term debt, I converted the September 6, 2000, 6.48% discount rate on thirty-day "AA nonfinancial" commercial paper into an annual yield of 6.61% using the following formula:[9]

For the year ended December 31, 1999.

[7] Standard & Poor's Ratings Direct - Financial Medians: Telecommunications Companies, www.ratingsdirect.com/cgi-bin/gx.cgi/AppLogic+GetArticle?article_id=142336, September 15, 2000.

[8] Standard & Poor's Ratings Direct, www.ratingsdirect.com/cgi-bin/gx.cgi/AppLogic+ShowDetail?entity_id+109413; Moody's - Quick Search, www.moody's.com/moody's/cust/qcksearch/…, September 14, 2000.

[9] "Commercial Paper," Federal Reserve Release, June 23, 2000,

152 $$Annual\ yield = \frac{\left[discount\ rate \times \left(\frac{days\ to\ maturity}{360}\right)\right]}{\left[1 - discount\ rate \times \left(\frac{days\ to\ maturity}{360}\right)\right]} \times \left(\frac{365}{days\ to\ maturity}\right)$$

153 ## Cost of Long-Term Debt

154 **Q. What is the embedded cost of long-term debt for AI?**

155 A. The embedded cost of long-term debt for AI is 6.73%, as derived on Schedule
156 11.03. With one exception, I calculated the annual interest on each of the capital
157 lease obligations by multiplying the interest rate factor given by the Company in its
158 response to Staff Data Request JF-1.20 by the respective 1999 ending balance.[10]
159 However, the Company did not justify the extremely high 18.19% interest rate factor
160 for Lease number Q16890B entered into in October of 1995.[11] Therefore, I imputed
161 an interest rate of 6.41% to that lease, which is the rate for the other lease that
162 started in October 1995.[12] The 6.41% interest rate factor is consistent with the
163 6.36% prevailing interest rate on utility bonds with seven years to maturity that were
164 rated AAA along with AI at that time.[13]

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www.federalreserve.gov/Releases/CP/default.htm.

[10] Company Response to Staff Data Request JF-3.02.

[11] Company Response to Staff Data Request JF-1.20; Company Response to Staff Data Request 3.03.

[12] Company Response to Staff Data Requests JF-1.20 and JF-3.01.

[13] Salomon Brothers - Bond Market Roundup: Abstract, October 27, 1995.

Cost of Common Equity

Q. How did you measure the investor required rate of return on common equity for AI?

A. I measured the investor required rate of return on common equity for AI with the discounted cash flow ("DCF") and risk premium models. I performed the DCF analysis under constant-growth and two-stage non-constant growth scenarios. My risk premium analysis specifically utilized the capital asset pricing model ("CAPM"). The DCF and CAPM models cannot be applied directly to AI because its common stock is not market-traded. Therefore, I applied those models to a sample of five telecommunications companies comparable to AI.

Telecommunications Sample

Q. How did you select a sample of telecommunications companies comparable to AI?

A. I began by researching the peer group companies used by AI witness Dr. Ibbotson to estimate the cost of common equity for AI.[14] I eliminated several companies that Dr. Ibbotson included because of recent developments and lack of necessary data. Bell Atlantic Corporation and GTE Corporation completed their merger in June 2000 and formed Verizon Communications, which I utilized in my sample. US West was acquired by Qwest Communications International in June of 2000. I eliminated

[14]AI Exhibit 6.0, Direct Testimony of Roger G. Ibbotson, Schedule 9.

Qwest, Broadwing Inc., Winstar Communications, and McLeod USA Inc. from the sample because they do not pay dividends on common stock. This screening reduced the number of sample companies to four: Bell South Corporation, CenturyTel Inc., SBC Communications Inc., and Verizon Communications. I then extensively researched companies in the telecommunications industry. I applied two criteria to screen these companies to find those most comparable to AI. First, I examined the revenue mix of the remaining companies and eliminated those with less than fifty percent of their revenue derived from local telephone operations. Next, I eliminated those companies that lacked the data necessary to conduct DCF and CAPM analyses. This research revealed only one additional telecommunications company that could be included in my sample, Hickory Tech Corporation.

DCF Analysis

Q. Please describe DCF analysis.

A. DCF analysis is a market-based approach for establishing a security's value. This value reflects all relevant risks the market associates with the security. DCF analysis establishes a cost of common equity capital directly from investors' rate of return requirements.

According to DCF theory, a security price equals the present value of the cash flow investors expect it to generate. Specifically, the market value of common stock

equals the cumulative value of the expected stream of future dividends after each is discounted by the investor required rate of return.

Q. Please describe the DCF model with which you measured the investor required rate of return on common equity.

A. As it applies to common stocks, DCF analysis is generally employed to determine appropriate stock prices given a specified discount rate. Since a DCF model incorporates time-sensitive valuation factors, it must correctly reflect the timing of the dividend payments that stock prices embody. Incorporating stock prices that the financial market sets on the basis of quarterly dividend payments into a model that ignores the time value of quarterly cash flows constitutes a misapplication of DCF analysis.

The companies in the sample pay dividends quarterly. Therefore, I applied a DCF model that measures the annual required rate of return on common equity as follows:

$$k = \left[\frac{D_{1,1}(1+k)^{0.25} + D_{1,2}(1+k)^{0.50} + D_{1,3}(1+k)^{0.75} + \ldots + D_{4} + P_{4}}{P}\right]^{\frac{1}{x + 0.25}} - 1$$

That model assumes the market value of common stock (i.e., stock price) equals the sum of the discounted value of each dividend. If growth is expected to grow at a constant rate, the DCF model reduces to the following.

$$k = \frac{\sum_{q=1}^{4} D_{0,q}(1+g)(1+k)^{1-[x+0.25(q-1)]}}{P} + g.$$

Schedule 11.04 describes the derivation of the DCF model.

Q. How did you estimate the growth rate parameter for the constant growth scenario?

A. Determining the market-required rate of return with the DCF methodology requires a growth rate that reflects the expectations of investors. Although the current market price reflects aggregate investor expectations, market-consensus expected growth rates cannot be measured directly. Therefore, I measured market-consensus expected growth indirectly with growth rates forecasted by securities analysts that are disseminated to investors.

I examined analysts' projected earnings growth rates in the August 17, 2000, edition of Institutional Brokers Estimate System (IBES) and data provided by Zacks Investment Research (Zacks) as of September 1, 2000. IBES and Zacks summarize and publish the earnings growth expectations of financial analysts employed by the research departments of investment brokerage firms. Both provide forward-looking estimates of expected earnings growth. Therefore, I averaged the IBES and Zacks forecasts to estimate investor expectations of future growth. Schedule 11.05 presents the analyst growth rate estimates for the telecommunications companies in the sample.

Q. How did you measure the stock price?

A. For each company in the sample, I measured its current stock price with its closing market price from September 6, 2000, as reported in the September 7, 2000 edition of *The Wall Street Journal*. Those stock prices are presented in Schedule 11.06. A current stock price reflects all information that is available and relevant to the market; thus, it represents the investors' assessment of the common stock's current value. Since current stock prices reflect all concurrently available and relevant information, historical stock prices must include information that no longer has relevance to current and expected market conditions. Moreover, historical stock prices cannot reflect all pertinent information. Hence, use of historical stock prices is inappropriate.

Since stock prices reflect the market's expectation of the cash flows the securities will produce and the rate at which those cash flows are discounted, an observed change in the market price does not necessarily indicate the required rate of return on common equity has changed. Rather, price changes may simply reflect investors' re-evaluation of the expected dividend growth rate. In addition, stock prices change with the approach of dividend payment dates. Consequently, when estimating the required return on common equity with the DCF model, analysts should measure the expected dividend yield and the corresponding expected growth rate concurrently. Using a historical stock price along with current growth expectations or combining an updated stock price with past growth expectations will

likely produce an inaccurate estimate of the market-required rate of return on common equity.

Q. Please explain the significance of the column titled "Next Dividend Payment Date" shown on Schedule 11.06.

A. Estimating year-end dividend values requires measuring the length of time between each dividend payment date and the first anniversary of the stock observation date. For the first dividend payment, that length of time is measured from the "Next Dividend Payment Date." Subsequent dividend payments occur in quarterly intervals.

Q. How did you estimate the next four expected quarterly dividends?

A. Most utilities declare and pay the same dividend per share for four consecutive quarters before adjusting the rate. Therefore, I assumed the dividend rate will adjust during the same quarter it changed during the preceding year. If the utility did not change its dividend during the last year, I assumed the rate would change during the next quarter. The growth rate was applied to the current dividend rate to estimate the expected dividend rate. Schedule 11.06 presents the current quarterly dividends. Schedule 11.07 presents the expected quarterly dividends.

Q. Under the constant growth scenario, what required rate of return on common equity does the DCF model estimate for the telecommunications sample?

A. Under the constant growth scenario, DCF analysis estimates the required rate of return on common equity at 15.76% for the telecommunications sample as shown on Schedule 11.08. Those estimates are derived from the growth rates from Schedule 11.05, the stock price and dividend payment dates from Schedule 11.06, and the expected quarterly dividends from Schedule 11.07.

Q. Why did you model a non-constant growth rate scenario?

A. The cost of common equity calculation derived from a constant-growth estimate is correct if the five-year growth rate forecast for each telecommunication company in the sample is expected to equal its average long-term dividend growth. However, the five-year growth rates projected for the companies in the telecommunications sample are high relative to economy-wide growth and thus unlikely to be maintained over the long-term. Therefore, I also implemented a DCF analysis that models growth in two stages.

Q. Please describe how you modeled the non-constant growth scenario for your DCF analysis.

A. I modeled two stages of dividend growth. The first, or short-term growth stage is assumed to last five years. The second, or long-term growth stage is assumed to last into perpetuity. An expected stream of dividends is estimated by applying these stages of growth to the current dividend. The discount rate that equates the present value of this expected stream of cash flows to the Company's current stock price, equals the market-required return on equity. Schedule 11.04 mathematically

303 presents the relationship between the cash flow stream, stock price, and market
304 required rate of return on common equity.

305 **Q. What stock price and dividend information did you use in conjunction with**
306 **your non-constant growth scenario?**
307 A. I used the same stock prices and dividends that were used with my constant
308 growth scenario. These stock prices and dividends are presented on Schedule
309 11.06.

310 **Q. What estimates of investor-expected growth did you employ in the non-**
311 **constant growth DCF analysis?**
312 A. For the short-term growth stage, I used the same growth rate estimates employed
313 in the constant growth scenario. These growth rates are presented on Schedule
314 11.05.

315 The second stage is an estimate of expected long-term economic growth. I
316 measured future long-term economic growth by computing the compound
317 forecasted annual growth in nominal Gross Domestic Product ("GDP") for the
318 period from 2000 through 2019.[15] The forecasted growth rate in nominal GDP for
319 the 2000 to 2019 period was 5.0%.

320 **Q. Why did you use growth in nominal GDP as the second stage growth rate**
321 **for the telecommunications companies in your sample?**

A. Company specific long-term growth rate forecasts are not available. Therefore, I used the projected long-term economic growth rate as a proxy for long-term dividend growth for the companies in my telecommunications sample. Over the long-term, companies cannot sustain growth at rates higher than the overall economy. I used growth in nominal GDP because it incorporates inflation expectations into the projected values that I used to estimate growth over the long-term.

In contrast, Dr. Ibbotson's second stage growth measures historical long-term growth in the economy by computing the compound annual growth in real GDP for the period 1948 to 1999. He added his inflation forecast of 4.1%, which is based on his estimate of what the bond market assesses long-term inflation might be, to this 3.3% real GDP historical growth estimate.[16] While Dr. Ibbotson's estimate of real GDP is in line with the forecasts of WEFA and the *Survey of Professional Forecasters,* his inflation estimate is much higher. When combined with his GDP estimate it produces a nominal GDP forecast that is in excess of the yields on U.S. Treasury bonds of all maturities. This does not make sense, since Treasury bond yields should incorporate both elements, GDP growth and inflation, plus a risk premium.

[15] WEFA, *U.S. Long-term Economic Outlook, Second Quarter 2000*, Table 1.3 - Gross Domestic Product, Current Dollars.

[16] AI Exhibit 6.0, Direct Testimony of Roger G. Ibbotson, pp. 21-22, Schedule 5.

Q. Based upon your non-constant growth scenario, what required rate of return on common equity does the DCF model estimate for your telecommunications sample?

A. Under a two-stage non-constant growth scenario, the DCF cost of equity for the telecommunications sample equals 8.30%, as shown on Schedule 11.09. This estimate is derived from the growth rates shown on Schedule 11.05 in the first stage and the 5.0% growth rate in nominal GDP in the second stage, the stock price and dividend payment dates on Schedule 11.06, and the expected first-year dividends on Schedule 11.07.

Risk Premium Analysis

Q. Please describe the risk premium model.

A. The risk premium model is based on the theory that the market-required rate of return for a given security equals the risk-free rate of return plus a risk premium associated with that security. A risk premium represents the additional return investors expect in exchange for assuming the risk inherent in an investment. Mathematically, a risk premium equals the difference between the expected rate of return on a risk factor and the risk-free rate. If the risk of a security is measured relative to a portfolio, then multiplying that relative measure of risk and the portfolio's risk premium produces a security-specific risk premium for that risk factor.

The risk premium methodology is consistent with the theory that investors are risk-averse. That is, investors require higher returns to accept greater exposure to risk.

Thus, if investors had an opportunity to purchase one of two securities with equal expected returns, they would purchase the security with less risk. Conversely, if investors had an opportunity to purchase one of two securities with equal risk, they would purchase the security with the higher expected return. In equilibrium, two securities with equal quantities of risk have equal required rates of return.

The Capital Asset Pricing Model (CAPM) is a one-factor risk premium model that mathematically depicts the relationship between risk and return as:

$$R_j = R_f + ?_j \times (R_m ? R_f)$$

where R_j ? the required rate of return for security *j*;

R_f ? the risk-free rate;

R_m ? the expected rate of return for the market portfolio; and

$?_j$? the measure of market risk for security *j*.

In the CAPM, the risk factor is market risk which is defined as risk that cannot be eliminated through portfolio diversification. To implement the CAPM, one must estimate the risk-free rate of return, the expected rate of return on the market portfolio and a security or portfolio-specific measure of market risk.

Q. How did you measure market risk on a security-specific basis?

A. Beta measures risk in a portfolio context. When multiplied by the market risk premium, a security's beta produces a market risk premium specific to that security.

The beta for a security or portfolio of securities is estimated with the following model using an ordinary least-squares technique:

$$R_{j,t} - R_{f,t} = ?_j + ?_j \times (R_{m,t} - R_{f,t}) + ?_{j,t}$$

where $R_{j,t}$? the return on security *j* in period *t*;

$R_{f,t}$? the risk-free rate of return in period *t*;

$R_{m,t}$? the return on the market portfolio in period *t*;

$?_j$? the intercept term for security *j*;

$?_j$? beta, the measure of market risk for security *j*; and

$?_{j,t}$? the residual term in period *t* for security *j*.

A beta can be calculated for firms with market-traded common stock. I calculated a beta for the telecommunications sample in three steps. First, I subtracted the U.S. Treasury bill return from the average percentage change in company stock prices and the percentage change in the Standard & Poor's 500 Index (S&P 500) to estimate each portfolio's return in excess of the risk-free rate. Second, the excess price returns of the sample were regressed against the excess price returns of the S&P 500 to estimate a raw beta. The regression analysis employs sixty monthly observations of stock return and U.S. Treasury bill yield data. Third, I adjusted the raw beta estimate through the following equation:

$$?_{adjusted} = 0.33743 + 0.66257 \times ?_{raw}.$$

Q. Why did you adjust the raw beta estimate?

A. Betas tend to regress towards the market mean value of 1.0 over time; therefore, the adjustment represents an attempt to estimate a forward-looking beta.[17] Empirical tests of the CAPM suggest that the linear relationship between risk, as measured by raw beta, and return is flatter than the CAPM predicts. That is, securities with raw betas less than one tend to realize higher returns than the CAPM predicts. Conversely, securities with raw betas greater than one tend to realize lower returns that the CAPM predicts. Adjusting the raw beta estimate towards the market mean value of 1.0 compensates for the observed flatness in the linear relationship between risk and return.[18] Securities with betas less than one are adjusted upwards thereby increasing the predicted required rate of return towards observed realized rates of return. Conversely, securities with betas greater than one are adjusted downwards thereby decreasing the predicted rate of return towards observed realized rates of return.

Q. What is the beta estimate for the sample?

A. The adjusted beta for the comparable sample, estimated over sixty months ending July 2000, equals 0.85.

Q. Why did you use a five year beta estimate?

A. Dr. Ibbotson relied on beta estimates published by IBES based on three years of weekly data and Bloomberg based on two years of weekly data. He claims that he

[17] Blume, Marshall E., "Beta and Their Regression Tendencies," *Journal of Finance*, June 1975, pp. 785-795.

[18] Litzenberger, Rmaswamy, and Sosin, "On the CAPM Approach to the Estimation of A Public

relied on these estimates derived over the shorter-term because five years of data may not be representative of the firm's current risk given the rapid pace of change in the telecommunications industry and the dramatic events in recent years.[19] In my opinion, a beta estimate using five years of monthly data is more appropriate for determining the beta for the companies in the telecommunications sample. The rapid pace of technological change and the advent of competition in the telecommunications industry is not a recent development. The Commission altered the regulatory structure of Illinois Bell in Docket No. 92-0448 to allow the Company and ratepayers to transition themselves to more competitive telecommunications marketplace.[20] Hence, use of five years of data to calculate beta is within the era of rapid structural and technological change in the telecommunications industry.

A longer time period incorporates more data points and is less susceptible to the wide variations as manifest in as comparison of the two-year and three-year beta estimates that Dr. Ibbotson employed.[21] Moreover, use of monthly data mitigates the effect of non-simultaneous closing prices.[22]

Q. What would the beta estimate for your sample be if you used IBES three year beta estimates?

Utility's Cost of Equity Capital," *Journal of Finance*, May 1980, pp. 375-376.

[19] AI Exhibit 6.0, Direct Testimony of Roger G. Ibbotson, Schedule 9.

[20] Docket 92-0448/93-0239 Consolidated, Order, October 11, 1994.

[21] AI Exhibit 6.0, Direct Testimony of Roger G. Ibbotson, Schedule 9.

[22] Litzenberger, Ramaswamy, and Sosin, "On the CAPM approach to the Estimation of a Public Utility's Cost of Equity Capital," *Journal of Finance*, May 1980, p. 375.

A. If I had used three-year unadjusted IBES beta estimates, the beta estimate for my sample would have been 0.54.[23]

Q. How did you estimate the risk-free rate of return?

A. I examined the suitability of the yields on three-month U.S. Treasury bills and thirty-year U.S. Treasury bonds as estimates of the risk-free rate of return.

Q. Why did you examine the yields on U.S. Treasury bills and bonds as measures of the risk-free rate?

A. The proxy for the nominal risk-free rate should contain no risk premium and reflect similar inflation and real risk-free rate expectations to the security being analyzed through the risk premium methodology.[24] The yields of fixed income securities include premiums for default and interest rate risk. Default risk pertains to the possibility of default on principal or interest payments. Securities of the United States Treasury are virtually free of default risk by virtue of the federal government's fiscal and monetary authority. Interest rate risk pertains to the effect of unexpected interest rate fluctuations on the value of securities.

Since common equity theoretically has an infinite life, its market-required rate of return reflects the inflation and real risk-free rates anticipated to prevail over the long run. U.S. Treasury bonds, the longest term treasury securities, are issued with terms to maturity of thirty years; U.S. Treasury notes are issued with terms to

[23] IBES Custom Report - Utility Sector, August 17, 2000.

maturity ranging from two to ten years; U.S. Treasury bills are issued with terms to maturity ranging from ninety-one days to one year. Therefore, U.S. Treasury bonds are more likely to incorporate within their yields the inflation and real risk-free rate expectations that drive, in part, the prices of common stocks than either U.S. Treasury notes or Treasury bills.

Although U.S. Treasury bond yields are more likely to incorporate the inflation and real risk-free rate expectations embodied in the returns demanded from common stock, U.S. Treasury bill yields contain a smaller premium for interest rate risk. Due to relatively long terms to maturity, U.S. Treasury bond yields contain an interest rate risk premium that diminishes their usefulness as measures of the risk-free rate. Thus, in terms of interest rate risk, U.S. Treasury bill yields more accurately measure the risk-free rate.

Q. Given that the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bonds and the prices of common stocks are similar, does it necessarily follow that the inflation and real risk-free rate expectations that are reflected in the yields on U.S. Treasury bills and the prices of common stocks are dissimiliar?

A. No. To the contrary, short and long-term inflation and real risk-free rate expectations, including those that are reflected in the yields on U.S. Treasury bills, U.S. Treasury bonds, and the prices of common stocks should equal over time. Any

[24] Real risk-free rate and inflation expectations comprise the non-risk related portion of a security's

other assumption unrealistically implies that the real risk-free rate and inflation are expected to systematically and continuously rise or fall.

Although expectations for short and long-term real risk-free rates and inflation should equal over time, in finite time periods, short and long-term expectations may differ. Short-term interest rates tend to be more volatile than long-term interest rates.[25] Consequently, over time U.S. Treasury bill yields are less biased (i.e., more accurate) but less reliable (i.e., more volatile) estimators of the long-term risk-free rate than U.S. Treasury bond yields. In comparison, U.S. Treasury bond yields are more biased (i.e., less accurate) but more reliable (i.e., less volatile) estimators of the long-term risk-free rate. Therefore, an estimator of the long-term nominal risk-free rate should not be chosen mechanistically. Rather, the similarity in current short and long-term nominal risk-free rates should be evaluated. If those risk-free rates are similar, then U.S. Treasury bill yields should be used to measure the long-term nominal risk-free rate. If not, some other proxy or combination of proxies should be found.

Q. What are the current yields on three-month U.S. Treasury bills and thirty-year U.S. Treasury bonds?

A. Three-month U.S. Treasury bills are currently yielding 6.35%. Twenty year U.S. Treasury bonds are currently yielding 6.08%. Thirty-year U.S. Treasury bonds are

rate of return.

[25] Fabozzi and Pollack, ed., *The Handbook of Fixed Income Securities*, Fourth Edition, Irwin, p. 789.

currently yielding 5.79%. These estimates are derived from quotes for September 6, 2000.[26] Schedule 11.10 presents the published quotes and effective yields.

Q. Of the U.S. Treasury bill and bond yields, which is currently a better proxy for the long term risk-free rate?

A. In terms of the gross domestic product (GDP) price index, WEFA forecasts the inflation rate will average 1.9% annually during the 2000-2019 period.[27] In terms of the consumer price index (CPI), the *Survey of Professional Forecasters (Survey)* forecasts the inflation rate will average 2.5% during the 2000-2009 period.[28] In terms of real GDP growth, WEFA forecasts the real risk-free rate will average 3.1% during the 2000-2019 period.[29] The *Survey* forecasts real GDP growth will average 3.1% during the 2000-2009 period.[30] Those forecasts imply a long-term, nominal risk-free rate between 5.0% and 5.7%.[31] Therefore, the WEFA and *Survey* estimates of inflation and real GDP growth expectations indicate that the thirty-year U.S. Treasury bond yield more closely approximates the long-term risk-free rate. Therefore, despite the presence of an interest rate risk premium, I conclude that the thirty-year U.S. Treasury bond yield is currently the superior proxy for the long-term

[26] Federal Reserve Statistical Release, *H.15 Selected Interest Rates*, September 11, 2000.
[27] WEFA Group, *U.S. Long-Term Economic Outlook*, vol. 1, Second Quarter 2000, pp. 4.4-4.5.
[28] Federal Reserve Bank of Philadelphia*, Survey of Professional Forecasters,* August 21, 2000.
[29] WEFA Group, *U.S. Long-Term Economic Outlook*, vol. 1, Second Quarter 2000, pp. 4.2-4.3.
[30] Federal Reserve Bank of Philadelphia*, Survey of Professional Forecasters, February 22*, 2000.
[31] Nominal interest rates are calculated as follows:

$$r = (1 + R) \times (1 + i) - 1.$$

where r = nominal interest rate;
R = real interest rate; and
i = inflation rate.

risk-free rate. Note that the interest rate risk premium causes the thirty-year U.S. Treasury bond yield to over-state the long-term risk free rate.

Q. How was the expected rate of return on the market portfolio estimated?

A. The expected rate of return on the market was estimated by conducting a DCF analysis on the firms composing the Standard & Poor's 500 Index. That analysis uses dividends and closing market prices as of June 30, 2000, as reported in the July 2000 edition of Standard & Poor's *Security Owner's Stock Guide*. Growth rate estimates were obtained from the June 2000 edition of *IBES Monthly Summary Data* and June 29, 2000 Zacks reports. Firms not paying a dividend as of June 30, 2000, or for which neither IBES nor Zacks growth rates were available were eliminated from the analysis. The resulting company-specific estimates of the expected rate of return on common equity were then weighted using relative market value data from Salomon Brothers, *Performance and Weights of the S&P500: Second Quarter 2000.* The estimated weighted average expected rate of return for the remaining 386 firms, composing 74.36% of the market capitalization of the S&P 500, equals 16.18%.

Q. What is the risk premium estimate of the required rate of return on common equity for the comparable sample?

A. The risk premium model indicates that the required rate of return on common equity is 14.62% for the telecommunications sample. This estimate results from

measuring the risk-free rate with U.S. Treasury bond yields. The computation of that estimate is shown on Schedule 11.10.

Recommendation

Q. Based on your analysis, what is your estimate of the required rate of return on common equity for AI?

A. A thorough analysis of the required rate of return on common equity requires both the application of financial models and the analyst's informed judgment. An estimate of the required rate of return on common equity based solely on judgment is inappropriate. Nevertheless, because techniques to measure the required rate of return on common equity necessarily employ proxies for investor expectations, judgment remains necessary to evaluate the results of such analyses. Based on my analysis, in my judgment, the investor required rate of return for AI's common equity ranges from 11.80% to 14.40%.

Q. Please summarize how you formed the range for the investor required rate of return on AI's common equity.

A. The models from which the individual company estimates were derived are correctly specified and thus contain no source of bias. Consequently, estimates for a sample as a whole are subject to less measurement error than individual company estimates. Therefore, I formed a range for the sample by: 1) averaging the DCF-derived estimates of the required rate of return on common equity, or 12.03%, and

rounding to the nearest tenth of a percent, or 12.00%; 2) adopting the U.S. Treasury bond yield as the risk-free rate proxy for the reasons stated above and rounding the resulting risk premium estimate of the required rate of return on common equity (14.62%), to the nearest tenth of a percent, or 14.60%. I then adjusted both ends of the range down 20 basis points to reflect the less risky position of AI relative to the telecommunications sample as a whole. The average bond rating of the telecommunications sample is in the A range, while AI is rated AA-. Quantifying the effect of risk on the cost of common equity of the difference in risk between AI and the telecommunications sample is problematic, therefore, I based my adjustment on the difference in long-term public utility bond yields rated Aa and A by Moody's, which is approximately 20 basis points.[32] This 20 basis point adjustment lowers my recommended range for the required rate of return on common equity for AI to 11.80% - 14.40%, with a midpoint estimate of 13.10%.

Q. Why did you average the results of the constant growth DCF and the non-constant growth DCF analyses?

A. The results of the DCF analyses represent the two extreme ends of the possible range for AI's cost of equity. Clearly, the five year growth rates are not sustainable resulting in an overestimated cost of common equity. Similarly, the DCF estimate under the non-constant scenario is too low relative to the 7.96% yield on Aa-rated utility bonds.[33] That suggests that the transition from rapid growth to average

[32] Moody's Economic Commentary - Moody's Indices and Yield Averages, www.moodys.com/moodys/cust/ecocomm/averages_ecocom.asp, September 15, 2000.
[33] Ibid.

economic growth is expected to take longer than the two stage growth scenario implies. Therefore, I computed the average of the constant growth DCF and the non-constant growth DCF analyses to obtain a reasonable estimate of a DCF-derived cost of equity for AI.

Q. Should the investor required rate of return on common equity be adjusted for issuance costs?

A. No adjustment for issuance costs should be made to the investor required rate of return on common equity for AI. Company Schedule D-5, submitted in response to Staff Data Request SDR-074, stated that "No common equity has been issued by Ameritech Illinois since the conclusion of 92-0448." In Docket 92-0448, no adjustment for issuance costs was allowed by the Commission.[34]

Overall Cost of Capital

Q. What is the overall cost of capital for AI in this proceeding?

A. As shown on Schedule 11.11, the overall cost of capital for AI ranges from 9.74% to 11.30% with a midpoint estimate of 10.52%. The midpoint estimate is based on a cost of common equity of 13.10%.

Q. Does this conclude your direct testimony?

A. Yes, it does.

[34] Docket 92-0448/93-0239 Consolidated, Order, October 11, 1994.